

REMARKS

I. Introduction

In response to the Office Action dated December 13, 2005, claims 1, 8, 15, and 22 have been amended. Claims 1-28 remain in the application. Re-examination and re-consideration of the application, as amended, is requested.

II. Objections to the Specification

In paragraph (2) of the Office Action, the disclosure was objected to for the lack of reference numbers. Applicants have amended the cross reference section to include the copending application serial numbers and submit that the objection is now moot.

III. Non-Art Rejections

In paragraph (1) of the Office Action, claims 2, 9, 16, and 23 were rejected under 35 U.S.C. §112, second paragraph, as being indefinite because the specification allegedly fails to describe how external means are actually used or configured.

In paragraph (2) of the Office Action, claims 2, 9, 16, and 23 were rejected under 35 U.S.C. §112, second paragraph, as being incomplete because it is not clear how the external means encompasses in relation to the remainder of the invention.

Applicants respectfully traverse these rejections. Paragraphs [0010] and [0011] of the present invention explicitly describe how external means are used to access nonvolatile memory:

[0010] However, there have been numerous attempts by individuals or companies (i.e., hackers or attackers) to attack, misuse, or modify the nonvolatile memory through external means of reprogramming or otherwise altering the contents of the memory when the memory component has been available to the central processor or otherwise on the system bus. For example, attacks using unforeseen methods or subverting poorly implemented defenses can be used to gain unauthorized access to the contents of the memory and/or lead to reprogramming the contents of the memory. Reprogramming or unauthorized access to the memory contents can lead to complete compromise of the security features intended in the device.

[0011] The simplest and most prevalent form of attack against the memory components uses external noninvasive means using a system's input/output module due to the low cost of the equipment required to implement this form of attack. Most attacks occur by inappropriate manipulation of a microprocessor or memory access control unit. For example, memory contents have been subverted when a memory access control unit (that controls access to a memory component) has been compromised. Once the single memory component has been breached, the attacker may then have the capability to access all memory address locations that reside other memory components.

As can be seen from this text, external noninvasive means uses a system's input/output module to attack and gain access to memory components. The present invention prevents such access by using a custom logic block that has a fixed algorithm that cannot be accessed by such external means.

In addition to the above, Applicants note that paragraph [0013] further describes the prevention of such access via external means. Applicants also direct the attention of the Examiner to paragraphs [0024], and [0060]-[0066] which provide explicit details regarding access via external means including the system input/output module.

In view of all of the above cited paragraphs and the context and knowledge in the art, Applicants respectfully traverse the rejections under 35 U.S.C. 112 and respectfully request removal of the rejection.

IV. Provisional Double Patenting Rejection

Claims 1, 8, 15, and 22 were provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 10, 19, and 28 of copending Application No. 10/085,346. Applicants note that the subject matter of the copending application and the present application may change thereby obviating the need for the submission of a terminal disclaimer. Applicants may be willing to submit a terminal disclaimer should one become necessary. However, at this time, Applicants traverse the rejection while reserving the right to submit a terminal disclaimer at a later date and upon the determination of allowable subject matter.

V. Prior Art Rejections

On pages (3)-(7) of the Office Action, claims 8-28 were rejected under 35 U.S.C. §102(e) as being anticipated by Kocher, U.S. Patent No. 6,289,455. On pages (8)-(10) of the Office Action, claims 1-7 were rejected under 35 U.S.C. §103(a) as being unpatentable over Cohen et al. (Cohen), U.S. Patent No. 5,282,249, in view of Kocher.

Specifically, independent claims 1, 8, 15, and 22 were rejected as follows:

As to claim 8, Kocher teaches a method for limiting unauthorized access to digital services comprising:

(a) configuring a protected nonvolatile memory component (col. 21, line 13 to line 15), wherein: (i) the protected nonvolatile memory component is used to contain state information to provide desired functionality and enforce one or more security policies (i.e. regulating access) for accessing the digital services (col. 10, line 15 to line 47, and col. 5, line 55 to col. 6, line 3); and (ii) the

protected nonvolatile memory component and a microprocessor's nonvolatile memory component share a programming charge pump and programming control; and (b) controlling access to the nonvolatile memory component through a fixed state custom logic block (col. 21, line 2 to col. 22, line 25).

As to claim 15, Kocher teaches a conditional access module (CAM), (Fig. 2 Item 225) comprising:

(a) protected nonvolatile memory component (col. 21, line 13 to line 15), wherein: (i) the protected nonvolatile memory component is used to contain state information to provide desired functionality and enforce one or more security policies (i.e. regulating access) for accessing digital services (col. 10, line 5 to line 47, and col. 5, line 55 to col. 6, line 3); and (ii) the protected nonvolatile memory component and a microprocessor's nonvolatile memory component share a programming charge pump and programming control; and (b) a fixed state custom logic block configured to control access to the nonvolatile memory component (col. 21, line 2 to col. 22, line 25).

As to claim 22, Kocher teaches an article of manufacture for preventing unauthorized access to digital services comprising:

(a) means for configuring a protected nonvolatile memory component (col. 21, line 13 to line 15, wherein: (i) the protected nonvolatile memory component is used to contain state information to provide desired functionality and enforce one or more security policies (i.e. regulating access) for accessing the digital services (col. 10, line 5 to line 47, and col. 5, line 55 to col. 6, line 3); and (ii) the protected nonvolatile memory component and a microprocessor's nonvolatile memory component share a programming charge pump and programming control; and (b) means for controlling access to the nonvolatile memory component through fixed state custom logic block (col. 21, line 2 to col. 22, line 25).

As to claim 1, Cohen teaches and describes a system for controlling access to digital services comprising: (a) a control center configured to coordinate and provide digital services; (b) an uplink center configured to receive the digital services from the control center and transmit the digital services to a satellite (Fig. 1/1 Item 20); (c) the satellite configured to: (i) receive the digital services from the uplink center (Fig. 1/2 Item 22); (ii) process the digital services (Fig. 1/2 Item 22); and (iii) transmit the digital services to a subscriber receiver station (Fig. 1/2 Item 24); (d) the subscriber receiver station configured to: (i) receive the digital services from the satellite (Fig. 1/2 Item 26); (a) control access to the digital services through an integrated receiver/decoder (IRD) (Fig. 1/2 Item 30); and (e) a conditional access module (CAM) communicatively coupled to the IRD (Fig. 1/2 Item 32), [col. 4, line 12 to line 66].

Cohen does not disclose the CAM comprising nonvolatile protected memory component having state information to enforce desired functionality. However, Kocher discloses the CAM (Fig. 2 Item 225) comprising: (i) a protected nonvolatile memory component, wherein: (1) the protected nonvolatile memory component (col. 21, line 13 to line 15) is used to contain state information to provide desired functionality and enforce one or more security policies (i.e. regulating access) for accessing the digital services (col. 10, line 5 to line 47, and col. 5 to col. 6, line 3); and (2) the protected nonvolatile memory component and a microprocessor's nonvolatile memory component share a programming charge pump and programming control; and (ii) a fixed state custom logic block configured to control access to the nonvolatile memory component (col. 21, line 2 to col. 22, line 25).

Kocher is analogous art because it discusses a method and apparatus for preventing piracy of digital content including the use of a smart card.

Therefore, it would have been obvious to one ordinary skilled in the art at the time of invention to include the teachings and features of CAM found in Kocher in the smart card used by Cohen, to control access to the broadcast data, because Kocher's method of protected memory of monitored data by using state information would not only promote security structure in the system of Cohen during receiving and distributing digital content (Kocher: col. 5, line 55 to line 56) but will also provide safeguards against attempt by unauthorized person to breach security of system.

Applicant traverses the above rejections for one or more of the following reasons:

- (1) Kocher fails to teach, disclose or suggest two different nonvolatile memory components that share programming control and a programming charge pump; and
- (2) Kocher fails to teach, disclose or suggest programming control and a programming charge pump that are shared by both the protected nonvolatile memory component and a microprocessor's non-protected nonvolatile memory component.

Independent claims 1, 8, 15, and 22 are generally directed to controlling access to digital services. More specifically, the claims provide for a control center providing digital services to an uplink center that transmits the services to a satellite which sends it to a subscriber receiver station. A conditional access module (CAM) in the subscriber receiver station has specific functionality. Namely, a protected nonvolatile memory component contains state information that provides functionality and enforces security policies for accessing the digital services.

In addition, the protected nonvolatile memory component and a non-protected nonvolatile memory component of the microprocessor share a programming charge pump and programming control. Such a non-protected nonvolatile memory component, a protected nonvolatile memory component, and sharing is clearly described in paragraphs [0060]-[0069] and FIG. 6. In this regard, FIG. 6 clearly illustrates that the microprocessor's nonvolatile memory component 606 is not protected by the custom logic block 612 while the protected nonvolatile memory component 614 is secured via the custom logic block 612.

The cited references do not teach nor suggest these various elements of Applicants' independent claims.

In rejecting the aspects of the shared programming charge pump and programming control, the Office Action merely passes over the claim limitation and fails to cite or describe any location in Kocher. Applicants further note that an electronic search of Kocher for the term "pump" provides no results whatsoever. Without even mentioning the word "pump", Kocher cannot possibly teach, disclose, or suggest the ability to share a programming charge pump and programming control across such nonvolatile memory components.

Further, under MPEP §2142 and 2143.03 "To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). "All words in a claim must be considered in judging the patentability of that claim against the prior art." *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494,

496 (CCPA 1970).” In this regard, the claim limitations regarding the sharing of programming charge pumps and programming control cannot merely be ignored or bypassed when rejecting the claims.

Again, not only does the Office Action fail to address these specific claim limitations, but the cited reference, Kocher, fails to remotely reference, suggest, or allude to, explicitly or implicitly, such claim limitations.

Moreover, the various elements of Applicants’ claimed invention together provide operational advantages over Kocher and Cohen. In addition, Applicants’ invention solves problems not recognized by Kocher and Cohen.

Thus, Applicants submit that independent claims 1, 8, 15, and 22 are allowable over Kocher and Cohen. Further, dependent claims 2-7, 9-14, 16-20, and 23-28 are submitted to be allowable over Kocher and Cohen in the same manner, because they are dependent on independent claims 1, 8, 15, and 22, respectively, and thus contain all the limitations of the independent claims. In addition, dependent claims 2-7, 9-14, 16-20, and 23-28 recite additional novel elements not shown by Kocher and Cohen.

VI. Conclusion

In view of the above, it is submitted that this application is now in good order for allowance and such allowance is respectfully solicited. Should the Examiner believe minor matters still remain that can be resolved in a telephone interview, the Examiner is urged to call Applicants' undersigned attorney.

Respectfully submitted,



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